

1. (Amended) In an aerobic wastewater treatment plant comprising:

a vessel defining an aeration chamber and having a substantially flat bottom wall and a cylindrical side wall,

[an] said aeration chamber containing aerobic bacteria into which wastewater containing organic solids flows to be exposed to aerobic bacteria to convert the organic solids in the wastewater to water and CO₂ [, said aeration chamber having a bottom and side walls],

[means] an aeration system [for injecting an oxygenation gas into the wastewater] in the aeration chamber to support growth of the aerobic bacteria, and

a clarifier chamber formed in said vessel and into which wastewater from the aeration chamber flows upwardly toward an outlet pipe through which the wastewater flows from the wastewater treatment plant, said clarifier chamber being defined by a partition in the form of an inverted, truncated cone into the bottom of which the wastewater flows from the aeration chamber,

the improvement [comprising a diffuser] wherein said aeration system [for releasing the oxygenation gas as bubbles into the aeration chamber of the wastewater treatment plant, said diffuser] forms an aeration area adjacent the intersection of the bottom and side walls of the vessel and [providing] provides sufficient flow such that all solids suspended within the plant are forced into circulation, [said diffuser being placed close to the bottom of the aeration chamber of the wastewater treatment plant and close to the side wall of the aeration chamber,] said [diffuser] aeration system providing sufficient oxygenation gas to allow the aerobic bacteria to convert the wastewater into CO₂ and water.

3. (Amended) The wastewater treatment plant of claim [2] 1, wherein the released oxygenation gas from the aeration area produces a wastewater current in the aeration chamber, the current flowing upwardly from a position of the [diffuser] aeration system in a direction

[perpendicular to] upwardly from the bottom wall of the [aeration chamber] vessel and [parallel to] along the side wall of the [aeration chamber] vessel, then around the partition which defines the clarifier chamber, then downwardly along the opposite side wall to the bottom and then across the bottom wall under the opening to the clarifier chamber and around the side wall of the [aeration chamber] vessel adjacent the bottom wall of the [chamber] vessel to keep solids from settling on the bottom of the aeration chamber.

4. (Amended) The wastewater treatment plant of claim 3 wherein said oxygenation gas injecting means further comprises:

a drop line having a first end attached to an external oxygenation source and a second end open to dispense oxygenation gas received from the external oxygenation gas source, said second end being attached to said [diffuser] aeration system.

7. (Amended) In an aerobic wastewater treatment plant comprising:
a vessel having a substantially flat, bottom wall and a cylindrical side wall and defining
an aeration chamber into which the wastewater flows to be exposed to aerobic bacteria to convert the organic solids in the wastewater to water and CO₂, [said aeration chamber having a bottom and side walls,]

means for injecting an oxygenation gas into the wastewater in the aeration chamber to support growth of the aerobic bacteria, and

a clarifier chamber in which wastewater from the aeration chamber flows upwardly toward an outlet pipe through which the wastewater flows from the wastewater treatment plant, said clarifier chamber being defined by a partition disposed in said vessel, said partition being in the form of an inverted, truncated cone into the bottom of which the wastewater flows from the aeration chamber,

Sub-B cont.
the improvement comprising means to generate a wastewater current in the aeration chamber[, the current flowing upwardly from] at a position close to the bottom and the side wall of the [aeration chamber,] vessel, the current flowing upwardly in a direction perpendicular to the bottom wall of the [aeration chamber] vessel and parallel to the side wall of the [aeration chamber] vessel, then around the partition which defines the clarifier chamber, then downwardly along the opposite side wall to the bottom and then across the bottom under the opening to the clarifier chamber and around the side wall of the [aeration chamber] vessel adjacent the bottom wall of the [chamber] vessel to keep solids from settling on the bottom of the aeration chamber.

AS
8. (Amended) The method of creating a wastewater current inside an aeration chamber of a wastewater treatment plant, said aeration chamber being formed by a vessel having a substantially flat, bottom wall and a cylindrical side wall[s], comprising [the step of]:

injecting an oxygenation gas at a position adjacent the intersection of the bottom wall and the side wall of said vessel such that a wastewater current is produced in the aeration chamber, the current flowing upwardly [from a position close to the bottom and side wall of the aeration chamber] in a direction perpendicular to the bottom wall of the [aeration chamber] vessel and parallel to the side wall of the [aeration chamber] vessel, then around [the] a partition which defines a clarifier chamber, then downwardly along the opposite side wall to the bottom and then across the bottom under an opening to the clarifier chamber and around the side wall of the [aeration chamber] vessel adjacent the bottom of the aeration chamber to keep solids from settling on the bottom of the aeration chamber.

9. (Amended) An aerobic wastewater treatment plant comprising:
an aeration chamber containing aerobic bacteria into which wastewater containing aerobic bacteria into which wastewater containing organic solids flows to be exposed to aerobic bacteria

to convert the organic solids in the wastewater to water and CO₂, said aeration chamber having a substantially flat, bottom wall and a cylindrical side wall[s],

means for injecting an oxygenation gas into the wastewater in the aeration chamber to support growth of the aerobic bacteria,

a clarifier chamber into which wastewater from the aeration chamber flows upwardly toward an outlet pipe through which the wastewater flows from the wastewater treatment plant, said clarifier chamber being defined by a partition in the form of an inverted, truncated cone into the bottom of which the wastewater flows from the aeration chamber,

[a diffuser] an aeration system for releasing the oxygenation gas as bubbles into the aeration chamber of the wastewater treatment plant, said [diffuser] aeration system providing sufficient flow such that all solids suspended within the plant are forced into circulation, said [diffuser] aeration system being placed close to the bottom of the aeration chamber of the wastewater treatment plant and close to the side wall of the aeration chamber, said [diffuser] aeration system providing sufficient oxygenation gas to allow the aerobic bacteria to convert the wastewater into CO₂ and water.

10. **(Amended)** An aerobic wastewater treatment plant comprising:

an aeration chamber into which the wastewater flows to be exposed to aerobic bacteria to convert the organic solids in the wastewater to water and CO₂, said aeration chamber having a substantially flat, bottom wall and a cylindrical side wall[s],

means for injecting an oxygenation gas into the wastewater in the aeration chamber to support growth of the aerobic bacteria,

a clarifier chamber in which wastewater from the aeration chamber flows upwardly toward an outlet pipe through which the wastewater flows from the wastewater treatment plant,

said clarifier chamber being defined by a partition in the form of an inverted, truncated cone into the bottom of which the wastewater flows from the aeration chamber, and

means for generating a wastewater current in the aeration chamber in an area adjacent the intersection of said side wall and said bottom wall, the current flowing upwardly from [a position close to the bottom and the side wall of the aeration chamber] said area in a direction perpendicular to the bottom of the aeration chamber and parallel to the side wall of the aeration chamber, then around the partition which defines the clarifier chamber, then downwardly along the opposite side wall to the bottom and then across the bottom under the opening to the clarifier chamber and around the side wall of the aeration chamber adjacent the bottom of the chamber to keep solids from settling on the bottom of the aeration chamber.

Please add the following new claims, 11-24.

11. An aeration apparatus for use in an aerobic wastewater treatment plant, comprising:

a vessel defining an aeration chamber, said vessel comprising a cylindrical side wall and a substantially flat, bottom wall,

an inlet into said aeration chamber,

a partition positioned in said vessel and defining a clarifier chamber, said partition being in the form of an inverted, truncated cone having a bottom opening facing said bottom wall,

an outlet from said clarifier, and

an injection system in said aeration chamber, said injection system creating an injection area adjacent the intersection of said side wall and said bottom wall, and

a source of air for said injection system.

12. The aeration apparatus of claim 11, wherein said injection system comprises at least one diffuser disposed adjacent the intersection of said side wall and said bottom wall, said diffuser being connected to said source of air.

13. The aeration apparatus of claim 11 wherein said injection system comprises multiple diffusers disposed adjacent the intersection of said side wall and said bottom wall, said diffusers being connected to said source of air.

AG
14. The aeration apparatus of claim 12, wherein a tubular line is connected between said diffuser and said source of air.

15. The aeration apparatus of claim 13, wherein there are tubular lines connected between said diffuser and said source of air.

16. The aeration apparatus of claim 14 or 15 wherein there are rigid conduits mounted to the inside of said vessel and said tubular lines extend through said rigid conduits.

Sub. B
17. The wastewater treatment plant of claim 1 wherein said diffuser system comprises multiple diffusers.

18. The wastewater treatment plant of claim 7 wherein said means to generate said current comprises a diffuser system for creating an injection area adjacent the intersection of said side wall and said bottom wall.

19. The wastewater treatment plant of claim 18 wherein said diffuser system comprises multiple diffusers.

Sub B
20. The method of claim 8 wherein injection of said oxygenation gas is through a diffuser system.

21. The method of claim 20 wherein injection of said oxygenation gas is through multiple diffusers.

Sub-BB cont.
22. The wastewater treatment plant of claim 9 wherein said [diffuser] aeration system comprises multiple diffusers.

23. The wastewater treatment plant of claim 10 wherein said means for generating said current comprises a diffuser system.

24. The wastewater treatment plant of claim 23 wherein said diffuser system comprises multiple diffusers.--

Respectfully submitted,



C. James Bushman
Reg. No. 24,810

Date: 7/17/00
Browning Bushman
5718 Westheimer, Suite 1800
Houston, TX 77057
Tel.: (713) 266-5593
Fax: (713) 266-5169

CERTIFICATE OF EXPRESS MAILING

I, Jan C. Lipscomb, hereby certify that this correspondence and all referenced enclosures are being deposited by me with the United States Postal Service as Express Mail with Receipt No. EL362272395US in an envelope addressed to the Assistant Commissioner for Patents, Box Reissue, Washington, DC 20231, on July 17, 2000.

By: Jan C. Lipscomb